much that is in the chapter must be mastered through the instructor's exposition, but we must make proper recognition when we meet with a treatment of vectors that continually keeps before the student the knowledge that vectors *can be used* and that makes the theorem that the curl of a gradient is zero appear as a matter of common sense (even to a pure mathematician). This is done by means of a well-explained example of a curl. The chapter closes with suggestive, rather than complete, proofs of Stokes's theorem and the formulas for small displacements, with incidental discussion of vector fields and potential.

An appendix provides a careful but broad selection and description of texts to be recommended for the student's further study in mathematics and mathematical physics.

WILLIAM DEW. CAIRNS.

PROBLEMS AND SOLUTIONS.

B. F. FINKEL, CHAIRMAN OF THE COMMITTEE.

PROBLEMS FOR SOLUTION.

ALGEBRA.

398. Proposed by R. D. CARMICHAEL, Indiana University.

In the equation $x^3 + \alpha x + \beta = 0$, α is an integer divisible by p^2 and β is an integer divisible by p, p being a prime number. Prove that β is divisible by p^3 if the equation is reducible.

399. Proposed by W. H. BUSSEY, University of Minnesota.

A borrows from B \$1,500 and pays back \$34 a month for 63 months. If the last payment closes the account, what rate of interest has A been paying?

400. Proposed by C. N. SCHMALL, New York City.

Sum the series

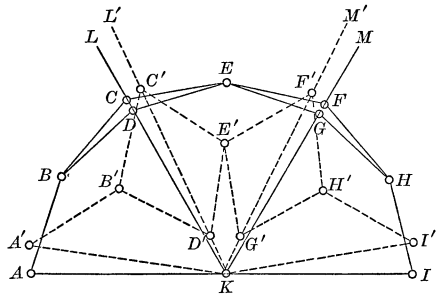
$$1 + 2x + 3x^2 + 4x^3 + \cdots$$

(BROMWICH, *Infinite Series*, p. 129, ex. 1.)

GEOMETRY.

427. Proposed by F. CAJORI, Colorado College.

In S. Gross's linkage for trisection of angles, shown in the figure (KL' and KM' being the



trisectors of $A'KI'$), C is fixed on KL, also F on KM; at starting, C and D coincide, also F and G;